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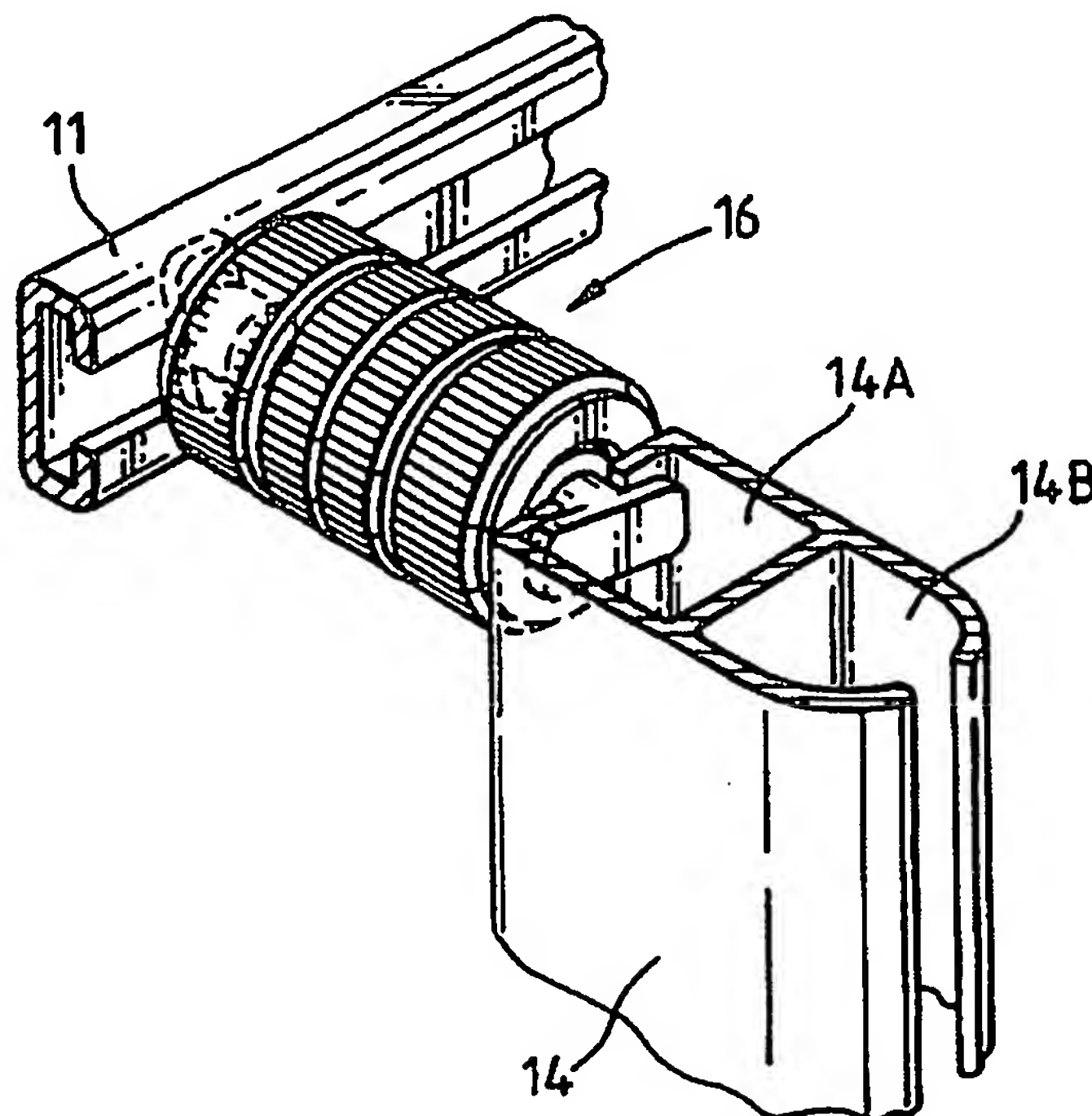
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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**(54) Title: A CONNECTOR FOR A SHOPFITTING SYSTEM****(57) Abstract**

A connector (16) is used to join C-shaped channel sections to form a display frame. Each end of the connector connects to a respective channel section, and has a T-shaped extension whose cap (21) captively locates within the respective channel section. A nut (23) on the connector body (24) is able to be screwed against the channel section to clamp the longitudinal edges of the channel section between the cap (21) and the nut (23) thereby frictionally locking the connector onto the channel section. The connector (16) is in two parts which can swivel relative to each other. In an alternative embodiment, a connector is provided with a screw clamp at one end for connection to a C-shaped channel section. The other end of the connector may be connected to a support member or other component of a display frame.



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## A CONNECTOR FOR A SHOPFITTING SYSTEM

THIS INVENTION relates to an improved shopfitting or display system and, in particular, to a connector for use in that system. The connector also has  
5 general application in connecting to a channel section.

## BACKGROUND ART

Shop display systems typically comprise shelves and racks mounted on "stripping". Such stripping is normally in the form of an extruded metal channel section  
10 having a series of spaced slots along the web of the channel. The stripping is fastened to walls or posts, and the shelves and racks are provided with lugs which engage in the slots in the stripping. The shelves, racks etc. are repositionable along the length of the  
15 stripping.

Although such stripping is relatively simple and economical to manufacture, it has several inherent disadvantages when used for shopfitting and displays. First, the shelves and racks are not infinitely  
20 adjustable along the length of the stripping, but may only be mounted at discrete locations whose spacing depends on the spacing between the slots in the stripping. Secondly, several lengths of stripping must be fastened to the walls, posts and other support members  
25 in order to provide sufficient display capacity. This, in turn, increases the cost of fitting out, and also detracts from the appearance of the shopfitting as the stripping is not aesthetically pleasing. Thirdly, display systems formed from lengths of stripping are not  
30 versatile and provide limited scope for reconfiguration.

In recent years, another shopfitting system, known as SLATWALL™, has become popular. The SLATWALL system uses wall panels which have spaced parallel slots formed in the surface of the panels, the slots normally  
35 being orientated horizontally. These slots are typically T- or L-shaped in cross section. Hanging arms or shelf brackets are provided with fittings which engage in the

slots, thereby enabling the hanging arms and shelf brackets to be connected quickly to the wall and supported by the wall in a cantilevered arrangement.

Although the SLATWALL system permits the hanging arms and shelf brackets to be infinitely adjustable in position in the horizontal direction, they are still limited vertically to discreet positions whose spacing is determined by the spacing between the slots in the wall. Furthermore, the SLATWALL system is quite expensive due to the need to purchase whole panels, as well as the inherent cost of machining slots in the panels and fitting metal channel extrusions to the slots for reinforcement.

It is an object of the present invention to provide an improved system of shopfitting for display purposes, which overcomes or ameliorates the abovedescribed disadvantages, or which at least provides the retailer with a useful choice.

It is a further object of the present invention to provide a connector for use in the shopfitting system.

It is a further object to provide a connector for connecting to channel sections.

#### SUMMARY OF THE INVENTION

In one form, the present invention provides a connector suitable for connecting two generally C-shaped channel sections, the connector comprising connection means at opposite ends thereof for releasable connection to a respective channel section, each connection means comprising first and second portions adapted to clamp at least one free longitudinal edge of a respective channel section between them.

Typically, the first portion is a T-shaped axial extension, the head or cap of which is captively located within the channel. The connector is able to slide longitudinally along the channel section, but is captively retained therein.

The second portion is a nut member, typically

in the form of a threaded sleeve or collar which is threaded onto the connector body, coaxial with the shank or stem of the T-shaped extension. The nut can be screwed against the channel section to frictionally lock the connector in position longitudinally relative to the channel section. More specifically, the longitudinal free edges on either side of the channel slot are clamped between the cap of the T-shaped extension and the nut so that the connector is frictionally restrained from movement along the channel section.

Preferably, one transverse dimension of the cap of the T-shaped extension is less than the width of the slot in the channel section, while an orthogonal transverse dimension of the cap is greater than the slot width. In this manner, the T-shaped extension can be inserted through the slot at any position along the channel, and then rotated a quarter turn to captively retain the T-shaped extension within the channel. The cap is preferably of rhomboid shape to wedge into frictional engagement with the channel. To remove the T-shaped extension, it is reverse rotated a quarter turn and withdrawn from the channel slot.

Preferably, the screw clamps at opposite ends of the connector member are able to swivel relative to each other.

In another form, the present invention provides a shopfitting or display frame comprising at least two generally C-shaped channel sections connected to each other by a connector as described above.

Typically, if the frame is wall-mounted, it comprises two spaced lengths of C-shaped channel section which are fixed to a wall or other supporting structure, generally horizontally. A respective connector is mounted to each track. The other end of each connector is connected to another length of channel section, typically an upright post. Hanger arms, shelf supports or other display fittings are suitably connected to the



post. If there are two or more posts, such fittings can be connected between the posts. As the connectors are slidable along the tracks, as well as along the post, the post may be positioned anywhere along the tracks, and  
5 also adjusted in height. Thus, within the finite limits imposed by the lengths of the channel sections, the post is infinitely adjustable in position.

Only two channel sections need be secured to the wall, thereby minimising installation time and costs.  
10 The simplicity of the system not only reduces its cost, but also enables the display apparatus to be reconfigured by the end user.

Thus, the present invention provides display apparatus which is simple and economical to manufacture, easy to install, infinitely adjustable, and easily  
15 reconfigurable by the end user.

In another form, the invention provides a connector suitable for connection to a generally C-shaped channel section, the connector comprising first and  
20 second portions adapted to clamp at least one free longitudinal edge of the channel section therebetween. The connector is suitably one half of the connector described above.

In order that the invention may be more fully understood and put into practice, a preferred embodiment  
25 thereof will now be described with reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of part of a display structure using the shopfitting system of the  
30 preferred embodiment;

Fig. 2 is a perspective view of part of the display structure of Fig. 1, illustrating a connector member, and

35 Fig. 3 is a part-sectional exploded elevational view of the connector member of Fig. 2.

#### DESCRIPTION OF PREFERRED EMBODIMENT

As shown in Fig. 1, a display structure 10 comprises a pair of rails or tracks 11, 12 which are fastened to wall 13, or other support structure. As shown more clearly in Fig. 2 each track 11, 12 is a length of channel section, preferably of C-shaped cross section.

The display structure also comprises a pair of spaced posts 14, 15 which may or may not rest upon the floor. Each post 14, 15 also has a C-shaped channel section. The posts 14, 15 are connected to the tracks 11, 12, and supported thereby, by respective pairs of connectors 16. The connectors 16, which will be described in more detail below, allow the posts 14, 15 to be positioned anywhere along the tracks 11, 12, and also to be raised or lowered relative to the tracks 11, 12.

Hanging arms 17 may suitably be connected between the posts 14, 15 for the display of merchandise, e.g. shirts, blouses, etc. For this purpose, the posts 14, 15 also have front opening channel portions, as shown more clearly in Fig. 2.

An alternative post 19 is also illustrated in Fig. 1. The extrusion from which the post 19 is formed also comprises a side-opening channel on either side thereof. In this manner, a straight hanging arm 18 may be connected between the posts 19 as illustrated in Fig. 1. This hanging arm 18 may be used for smaller articles, e.g. ties, scarves etc. (Although the two forms of the arms 17, 18 are both illustrated in Fig. 1, they need not be used together in the same display).

Typically, the tracks 11, 12, posts 14, 15, 19 and hanging arms 17, 18 are made from extruded aluminium sections. These components may be powdercoated to suit a particular decor.

The connectors 16 are used to connect the posts to the tracks. Each connector 16 is generally of short cylindrical form, and comprises connection means at each end for engagement with a C-shaped channel in a post or

track, as the case may be. The connection means at opposite ends of the connector are substantially identical, and are shown in more detail in Fig. 3. (The same reference numerals are used to indicate corresponding parts on the two connection means, one set of reference numerals having the suffix A to distinguish them from the other).

In the illustrated embodiment, each connection means comprises a T-shaped extension extending outwardly from a body part 24 of the connector. The extension is formed by a shank or stem 20 having a crosspiece or cap 21 thereon. One transverse dimension of the cap 21, and the thickness of stem 20, are less than the width of the slot of the channel section (e.g. channel 14A in post 14) to enable the cap 21 to be inserted through the slot into channel 14A. However, another transverse dimension of cap 21 (typically orthogonal to the firstmentioned transverse dimension) is wider than the slot such that when the cap 21 is rotated through an angle (typically 90°) the cap 21 is captively retained within the channel. Although the cap 21 is captively retained within the channel of the post or track, it is slidable longitudinally therealong, thereby allowing infinite adjustment of the connector along both the track or post.

The perimeter of cap 21 is generally of rhomboid shape with rounded corners. One diagonal dimension of the cap 21 is greater than the other diagonal dimension, the greater dimension being larger than the width of the channel in which the cap locates and the smaller diagonal dimension being less than channel width. In this manner, when the cap is rotated about the axis of the stem 20, its outer edges wedge against the sides of the channel in a friction fit, thereby fixing the connector in position. (The connector can be released from that position simply by rotating the cap in the opposite direction with sufficient manual force to overcome the frictional holding force).



Once the connector 16 is fixed in position, a nut is used to positively lock the connector 16 in place at that position on the track or post. The nut is in the form of a sleeve 23 threadedly mounted on the body part 24 of the connection means. Both the sleeve 23 and body part 24 may have knurled or grooved surfaces for grip enhancement. A TEFLON™ washer 25 is preferably interposed between the sleeve 23 and the cap 21. The washer partly locates in a cylindrical seat in the outer end of the sleeve 23.

As the sleeve 23 is turned in one direction, it urges the washer 25 towards the cap 21, thereby sandwiching the free ends of the channel section of the post or track between the cap 21 and washer 25, as shown in the left hand portion of Fig. 3. Thus, by a simple turn of the sleeve 23, that end of the connector 16 is clamped in position along the post or track. Similarly, the connection means at the other end of the connector 16 can be clamped in position along the other of the track or post using sleeve 23A.

The connector is suitably made of metal or other strong rigid material. Due to the secure connection between the two body parts 24, 24A, and the rigid connection between each end of the connector and its respective channel section, the connector is able to provide a secure inextensible connection between two channel sections.

One body part 24 has an integrally formed boss or stud 26 which locates in a socket 27 formed in the other body part 24A. A split spring washer 28 is compressed in annular groove 29 on stud 26 before the stud is inserted in socket 27. Once inserted, the spring washer 28 expands radially into annular groove 30 in socket 27, thereby locking the two body parts 24, 24A together in an axial direction but permitting relative rotation.

The two body parts 24, 24A of connector 16,

although connected axially, are able to swivel relative to each other about the longitudinal axis of the connector. Thus, even though a post may be fixed in position along a track by a connector, the post may be  
5 rotated about the longitudinal axis of the connector so as to be inclined at a desired angle.

It will be apparent to those skilled in the art that the connector 16 enables the posts and tracks to be connected quickly and simply. This permits the display  
10 apparatus 10 to be reconfigured by the end user without difficulty.

In addition, the posts are infinitely adjustable along the length of the tracks, and the connectors are infinitely adjustable along the length of  
15 the posts, thereby maximising flexibility of design configurations.

To install the display apparatus, only minimal fixing is required. For example, in the illustrated apparatus, only two tracks need be fastened to a wall or  
20 other supporting structure.

The foregoing describes only one embodiment of the invention, and modifications which are obvious to those skilled in the art may be made thereto without departing from the scope of the invention.

For example, the tracks may be mounted  
25 vertically, and the posts may be orientated horizontally. Alternatively, the tracks may be mounted on floor and ceiling, and the connectors used to mount panels adjustably between the floor and ceiling tracks. (For  
30 this purpose, channels can be mounted to the top and bottom edges of the panels, and the connectors may be of telescoping length).

In a further embodiment, the body part 24 and its associated connection means are fixed directly to a  
35 hanging arm, shelf bracket or other support member on which merchandise can be displayed. In this manner the hanging arm, bracket, or other support member can be

connected directly to a post or track mounted on the wall.

Although the connector .16 has been described with particular reference to its application to shopfitting and display systems, it can also be used in  
5 any other application where two channel sections are to be connected.

## CLAIMS

1. A connector suitable for connecting two generally C-shaped channel sections, the connector comprising connection means at opposite ends thereof for  
5 releasable connection to a respective channel section, each connection means comprising first and second portions adapted to clamp at least one free longitudinal edge of a respective channel section therebetween.
2. A connector as claimed in claim 1, wherein the  
10 connection means at opposite ends of the connector can swivel relative to each other about a longitudinal axis of the connector.
3. A connector as claimed in claim 2, wherein the first portion comprises a generally T-shaped member  
15 having a stem and a cap, the stem extending from a body part of the connection means, and the second portion comprises a nut threaded on the body part, wherein in use, the cap is captively located within a respective channel section but slidable therealong, and the nut can  
20 be screwed into engagement with the channel section so as to clamp at least one longitudinal edge of the channel section between the cap and the nut.
4. A connector as claimed in claim 3, further comprises a washer member located on the outer side of  
25 the nut, for abutment against the channel section.
5. A connector as claimed in claim 3, wherein each channel section has a pair of longitudinal free edges defining a slot therebetween, the cap having a transverse dimension which is less than the width of the slot and a  
30 second transverse dimension which is larger than the width of the slot.
6. A connector as claimed in claim 5, wherein the cap has a perimeter generally of rhomboid shape, one diagonal dimension of the cap being less than the  
35 internal width of its respective channel section, and the other diagonal dimension being greater than the internal width of that channel section.

7. A shopfitting or display frame comprising at least two generally C-shaped channel sections connected to each other by a connector as claimed in claim 1.

8. A shopfitting or display frame as claimed in claim 7 wherein a first channel section is fixed to a wall or other supporting structure, and a second channel section is orientated generally orthogonally to the first channel section and has means thereon for displaying merchandise.

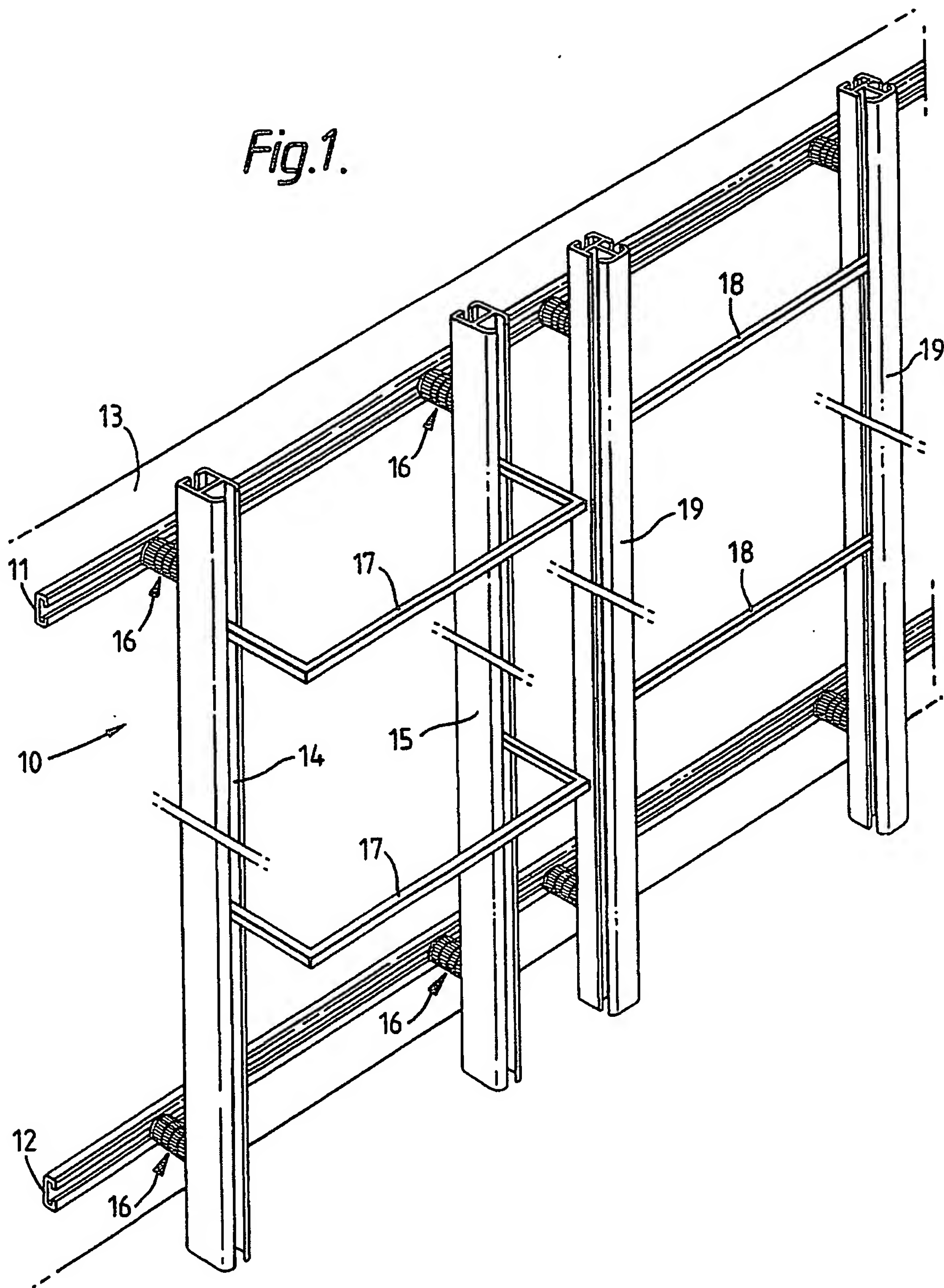
9. A connector suitable for connection to a generally C-shaped channel section, the connector comprising first and second portions adapted to clamp at least one free longitudinal edge of the channel section therebetween.

10. A connector as claimed in claim 9, wherein the first portion comprises a generally T-shaped member having a stem and a cap, the stem extending from a body part of the connector, and the second portion comprises a nut threaded on the body part, wherein in use, the cap is captively located within a respective channel section but slidable therealong, and the nut can be screwed into engagement with the channel section so as to clamp at least one longitudinal edge of the channel section between the cap and the nut.

11. A connector as claimed in claim 10, wherein the channel section has a pair of longitudinal free edges defining a slot therebetween, the cap having a transverse dimension which is less than the width of the slot and a second transverse dimension which is larger than the width of the slot.

12. A connector as claimed in claim 10, wherein the cap has a perimeter generally of rhomboid shape, one diagonal dimension of the cap being less than the internal width of the channel section, and the other diagonal dimension being greater than the internal width of the channel section.



*Fig.1.*

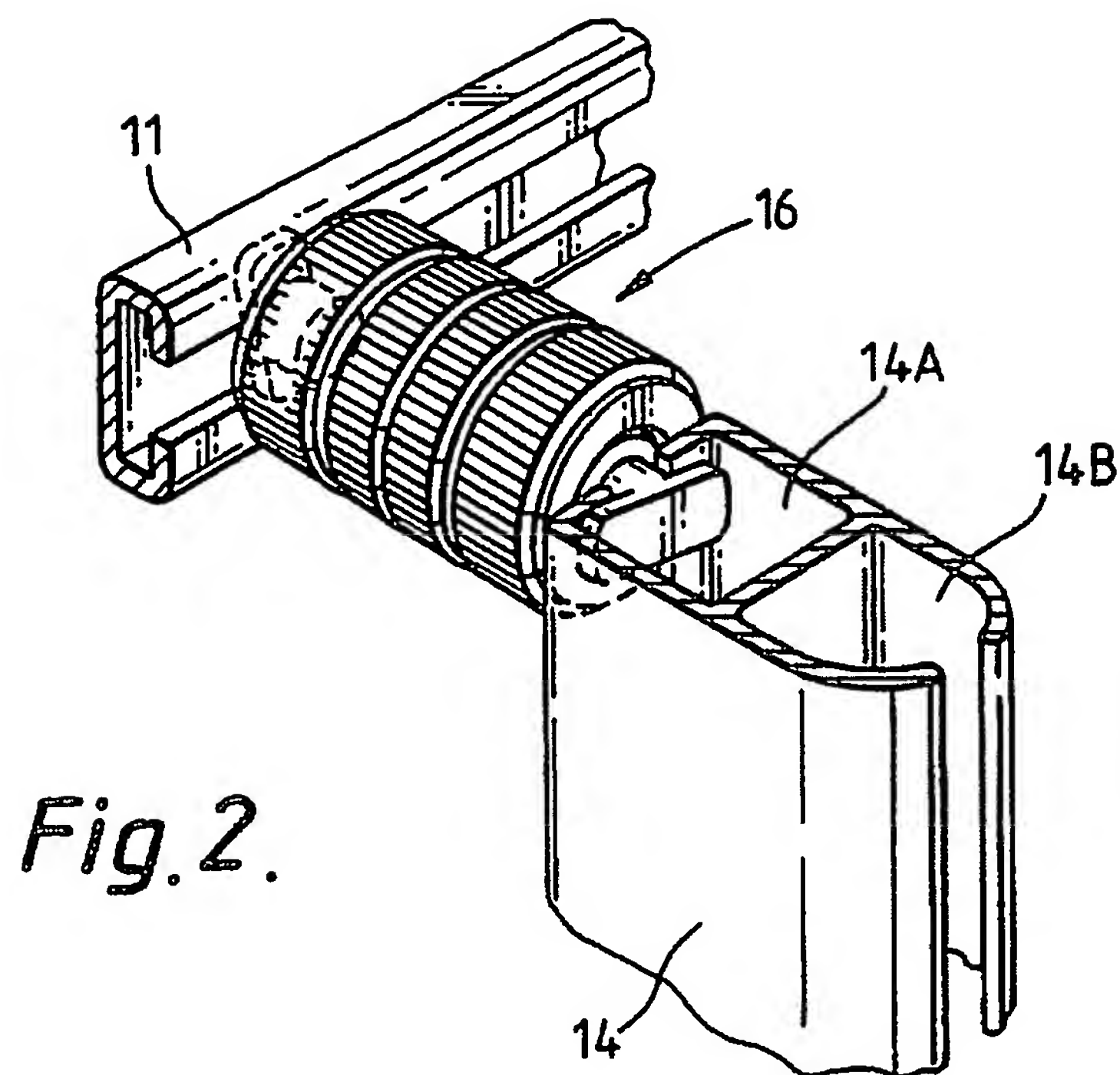
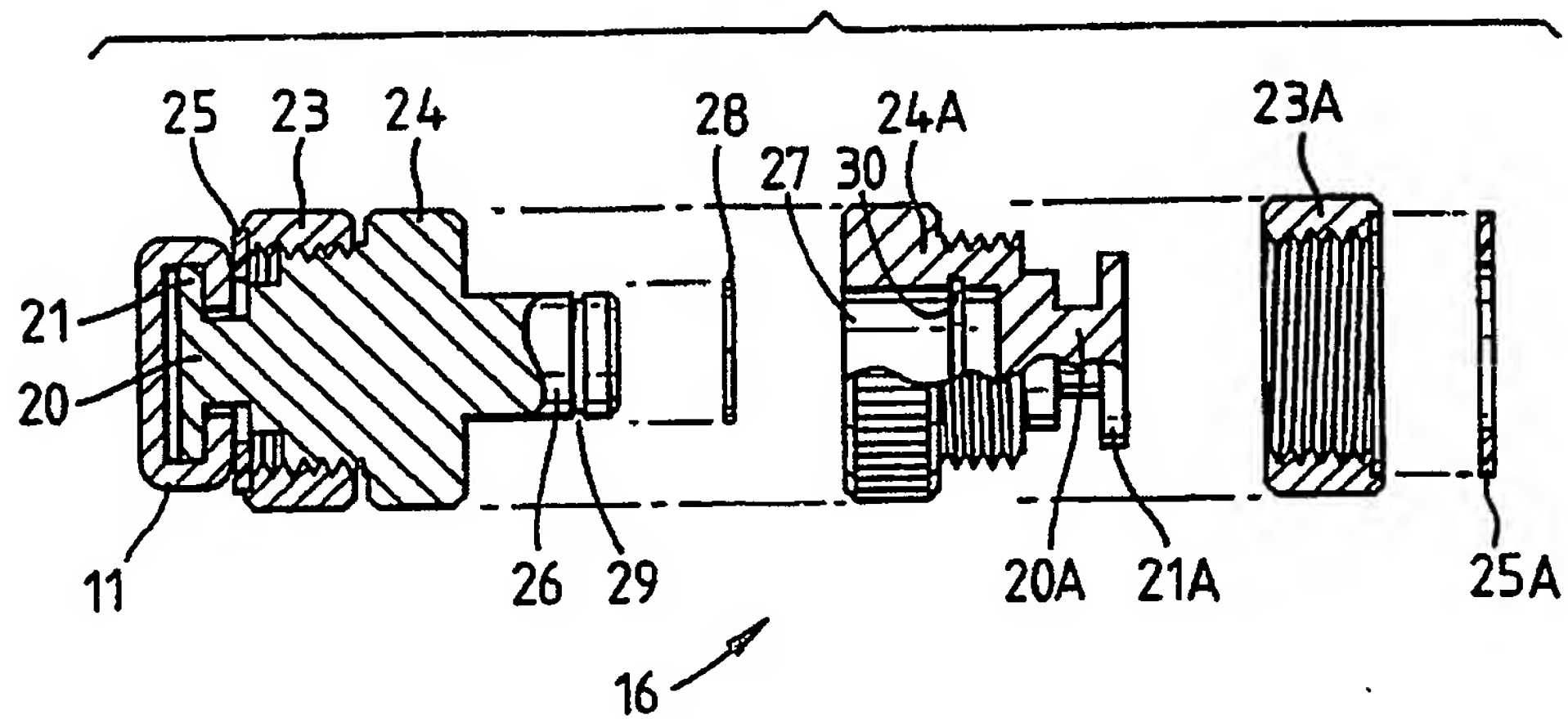



Fig. 3.



<b>A. CLASSIFICATION OF SUBJECT MATTER</b> Int. Cl. <sup>5</sup> F16B 7/20, A47F 5/00  According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>  Minimum documentation searched (classification system followed by classification symbols) IPC F16B 7/20, 2/00  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: IPC as above  Electronic data base consulted during the international search (name of data base, and where practicable, search terms used)				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.		
X	AU, A, (73945/91) (ALUSUISSE-LONZA SERVICES LTD) 17 October 1991 (17.10.91) See Fig 1	1, 9		
X	AU, A, (46983/89) (SWISS ALUMINIUM LTD) 28 June 1990 (28.06.90) See Fig 1	9		
X	AU, B, 510221 (24825/77) (HILTI AG) 9 November 1978 (09.11.78) See Fig 1	9		
A	AU, A, 36851/84 (QUEENSLAND MANUFACTURING CO. PTY. LTD.) 4 July 1985 (04.07.85)			
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <span style="margin-left: 200px;"><input checked="" type="checkbox"/> See patent family annex.</span>				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">           * Special categories of cited documents :            "A" document defining the general state of the art which is not considered to be of particular relevance            "E" earlier document but published on or after the international filing date            "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)            "O" document referring to an oral disclosure, use, exhibition or other means            "P" document published prior to the international filing date but later than the priority date claimed         </td> <td style="width: 50%; vertical-align: top;">           "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle of theory underlying the invention            "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone            "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art            "&amp;" document member of the same patent family         </td> </tr> </table>			* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle of theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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Date of the actual completion of the international search 17 June 1994 (17.06.94)		Date of mailing of the international search report 7 July 1994 (07.07.94)		
Name and mailing address of the ISA/AU  AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA  Facsimile No. 06 2853929		Authorized officer   S.K. GHOSH  Telephone No. (06) 2832163		

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